The Scientific Method

The Scientific Method is a process to gain knowledge. It requires thought, experience, and demands proof of results. People that think logically use parts of the Scientific Method. You probably use parts of it, too.

Basic Steps:

1. Learn about it (**Research**, observe; look, listen, etc.).

2. **Question** it (why is this happening?).

3. Try to explain it (**Hypothesis** – an educated question or guess about what will happen.).

4. Test it (**Experiment –** designed to gain information)

5. Analyze it (Collect and analyze **Data**.)

6. See what you learned about it (check your data, make **Conclusions**; was your hypothesis right?).

Possible Additional Steps

7. Retest it (maybe it was a fluke).

8. Maybe go back to step 1 or 2.

REMEMBER: Really Quiet Hippos Eat Dark Chocolate

Research; **Q**uestion; **H**ypothesis; **E**xperiment; Take **D**ata; Form **C**onclusions

Use the Scientific Method to determine an object is a gas or a liquid?

1. Research—Learn the properties of gases and liquids
2. Question—Is it a gas or a liquid?
3. Hypothesis—It is a liquid!
4. Experiment—
5. Data—
6. Conclusions—

Use the Scientific Method to determine an object is a liquid or a solid?

1.
2.
3.
4.
5.
6.

Measuring

Q: How could you measure the mass of a hole punch dot?

A:

Q: How could you measure the mass of a pile of bricks?

A:

Indirect Method of Measuring Small Mass

$$M_o = \frac{M_W}{N_W}$$

- M_o: Mass of 1 Object
- M_W: Mass of Whole Sample
- N_W: Number of Objects in Whole Sample
- "=": Means divided by

Ex. If 10 featers equal 1.5 grams, how much does one feather weigh?

Mass of 1 feather = 1.5 g/ 10 = 0.15 grams

Displacement method:
The volume of some objects is easy to find, like a cube or a cylinder. The volume of some irregular objects, like a rock, would be hard to calculate. If you put the object in water and measure the volume change, you have found the volume of the object.

Displacement Method of Measuring Volume

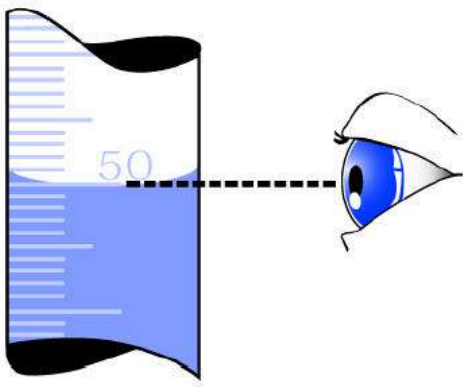
$$V_o = V_2 - V_1$$

- V_o: Volume of Object
- V_2: Second Volume
- V_1: First Volume

Reading the Meniscus

The **meniscus** is the curvature of some liquids in containers. It is caused by **adhesion** (an attraction between the liquid and the glass).

Measure at the Bottom -
or your reading will be too high



Eye Level -
or your reading will be too high